AMENDMENTS TO THE CLAIMS:

The following is a complete listing of all claims, including amendments, with a status identifier in parenthesis.

Listing of Claims

Claim 1 (currently amended): A method for forming a MOS transistor gate dielectric layer comprising:

providing a semiconductor substrate;

forming an oxide layer on the semiconductor substrate;

exposing the oxide layer to a high-density nitrogen plasma to incorporate nitrogen into the oxide layer thereby converting the oxide layer to an oxynitride layer; and

annealing said oxynitride layer in N_2O to form an onynitride layer with a [[a]] nitrogen concentration with less than 10% variation across the oxide layer.

Claim 2 (original): The method of claim 1 wherein the exposing the oxide layer to a high-density nitrogen plasma comprises a plasma power level of 700 – 900 watts.

Claim 3 (original): The method of claim 1 wherein annealing the oxynitride layer in N_2O comprises rapid thermal annealing at a temperature of 800°C - 1100°C for 10-60 seconds.

Claim 4 (currently amended): A method of forming a MOS transistor comprising:

providing a semiconductor substrate;

forming a gate dielectric layer less than 40 angstroms thick on the semiconductor substrate wherein the gate dielectric layer has a nitrogen concentration with less than 10% variation across the gate dielectric layer [[and]];

forming a conductive layer on said gate dielectric layer[[,]];

forming sidewall structures adjacent to said conductive layer; and

forming source and drain regions in the semiconductor substrate adjacent to said sidewall structures.

Claim 5 (previously amended): The method of claim 4 wherein said forming the gate dielectric layer comprises:

forming an oxide layer on the semiconductor substrate;

exposing the oxide layer to a high-density nitrogen plasma to incorporate nitrogen into the oxide layer thereby converting the oxide layer to an oxynitride layer; and

annealing said oxynitride layer in N_2O to form an oxynitride layer with a uniform nitrogen concentration profile.

Claim 6 (original): The method of claim 5 wherein the exposing the oxide layer to a high-density nitrogen plasma comprises a plasma power level of 700 – 900 watts.

Claim 7 (original): The method of claim 5 wherein annealing the oxynitride layer in N_2O comprises rapid thermal annealing at a temperature of 800°C - 1100°C for 10-60 seconds.

Claim 8 (original): The method of claim 4 wherein said uniform nitrogen concentration is greater than 6 atomic percent.

Claim 9 (cancelled)

Claim 10 (cancelled)

Claim 11 (withdrawn): A MOS transistor, comprising:

providing a silicon substrate;

a gate dielectric layer on the silicon substrate wherein the gate dielectric layer is less than 40 angstroms thick and wherein the gate dielectric layer has a uniform nitrogen concentration;

a conductive layer on the gate dielectric layer;

sidewall structures adjacent to said conductive layer; and

source and drain regions in the silicon substrate adjacent to the sidewall structures.

Claim 12 (withdrawn): The MOS transistor of claim 10 wherein the uniform nitrogen concentration is greater than 6 atomic percent.

Claim 13 (withdrawn): The MOS transistor of claim 12 wherein the uniform nitrogen concentration has a variation of less than 10% across the gate dielectric layer.

Claim 14 (currently amended): A method of forming a MOS transistor comprising:

providing a semiconductor substrate;

forming a gate dielectric layer less than 40 angstroms thick on the semiconductor substrate such that the gate dielectric layer has a nitrogen concentration greater than 6 atomic percent with less than 10% variation across the gate dielectric layer;

forming a conductive layer on said gate dielectric layer[[,]];

forming sidewall structures adjacent to said conductive layer; and

forming source and drain regions in the semiconductor substrate adjacent to said sidewall structures.

Claim 15 (original): The method of claim 14 wherein said forming said gate dielectric layer comprises:

forming an oxide layer on the semiconductor substrate;

exposing the oxide layer to a high-density nitrogen plasma to incorporate nitrogen into the oxide layer thereby converting the oxide layer to an oxynitride layer; and

annealing said oxynitride layer in N_2O to form an oxynitride layer with a uniform nitrogen concentration profile.

Claim 16 (original): The method of claim 15 wherein the exposing the oxide layer to a high-density nitrogen plasma comprises a plasma power level of 700 – 900 watts.

Claim 17 (original): The method of claim 16 wherein annealing the oxynitride layer in N_2O comprises rapid thermal annealing at a temperature of 800°C - 1100°C for 10-60 seconds.